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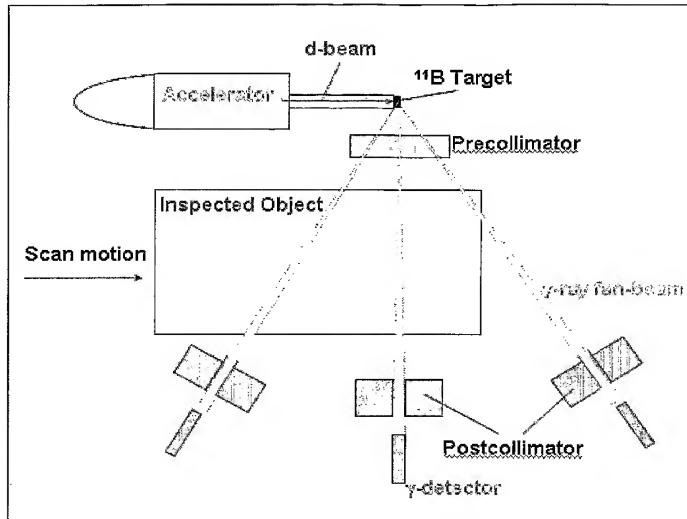
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(54) Title: METHOD AND SYSTEM FOR DETECTING SUBSTANCES, SUCH AS SPECIAL NUCLEAR MATERIALS



(57) Abstract: A system for detecting substances, the system including a dual-energy radiography (DER) system including a gamma-ray radiation source, including a beam accelerator and a target to which the accelerator sends a beam thereby producing gamma rays, and a plurality of gamma ray detectors positioned to detect gamma rays that pass from the gamma-ray radiation source through an object to be inspected, wherein the DER system is adapted to indicate a presence of a high-Z substance, by detecting a difference in a transmission attenuation characteristic of the high-Z substance as opposed to low-Z and medium-Z substances and differentiating among high-Z substances according to their density, as determined from a plurality of radiographic views.

WO 2005/059594 A1